

**SÁNDOR ESTÓK**

**THE POSSIBILITIES OF DEVELOPMENT  
OF THE MILITARY AND BUSINESS SUPPLY CHAIN  
IN INTERNATIONAL ENVIRONMENT**

Author's review of the PhD thesis

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## **INTRODUCTION**

### **DRAFTING THE ACADEMIC PROBLEM**

At the end of the 20th century, the accelerated development of logistics inspired new interpretations, which were further enhanced by our accession to the NATO and the European Union. The new interpretation of the notion of supply chain was at the focus of my interest. During my research (both in the military and the business field) my knowledge was widened by numerous new logistic approaches, aspects and methods. It occurred to me, that perhaps I should scientifically bring together civil logistic procedures and military logistic support and operational chains. Thus, to create for both an optimized, systematically integrated supply chain, capable of functioning in an interweaving network, and to present all this to logistic experts with professional support.

The operational and the civil logistic supply chains, which have necessarily gone through significant change in the last decades, were at the focus of my research. Starting out from the micro environment, they spread both in national and international space, through their integration and effectiveness. Nowadays, integrated and interdisciplinary logistics and supply chain are more and more comprehensively present in value adding procedures, both as far as military operations or business logistic environment is concerned. During my activity as a professor in higher education, my specialty has been logistics, and I also have the possibility to teach the development trends, new ways and methods of military operational and civil logistic supply chains and their networks, and to analyze, synthesize their effects from the logistic point of view.

In the last decade, during my extensive research, I have met several logistic interpretations and analyses, which were unexplored and lacked depth. I intend, with my present dissertation, to complete, develop and systematize the existing results. My objective is to draw attention to a theory and practice pointing in a new direction.

In my dissertation, I concentrate on the value chain, the supply chain, the military operational chain and their development in national, international and European environment.

The fields of analysis of my paper relate to the results of the research of DR. ANNA HUSZTY, PROFESSOR CHIKÁN, PROFESSOR KNOLL, PROFESSOR PORTER AND PROFESSOR PFOHL, where they examine the value chain, the supply chain and logistic networks.

The aim of my research is to study the development of the supply chain in the last decades of the 20<sup>th</sup> and the first quarter of the 21<sup>st</sup> century, with a special attention payed to the quickly changing effects and challenges.

## **HYPOTHESIS**

**H1** In my research I explore the birth and development of the value chain and the supply chain, and I seek answers to whether the results of the five researchers and their interrelations justify the development of the supply chain in the last decades of the 20<sup>th</sup> and the beginning of the 21<sup>st</sup> century. Considering the above, it is very likely, that some effects will be unfolded, which influence the possibilities and interrelations of its development. When exploring changes, I examine the importance of development and quality, the intensification of competitiveness and cooperation, all in the light of the creation and functioning of scientifically organized systems.

**H2** I am exploring the role of the operational supply chain in the operation. It is very probable, that the new, knowledge-based, network centric logistics enables great articulate spatial extension and its connection to Network Centric Warfare. I assume, that in the near future it will help solve the common tasks of military and civil logistics. I seek the answer whether the new possibilities can be used in the operational supply chain, among them especially focused<sup>1</sup> logistic capacities, space logistics and the use of hybrid force and manpower? By analysing the possibilities and the results, my forecast concerning the time period is the first decades of the 21<sup>st</sup> century. I think it is highly plausible, that the process beginning in our days carries in itself a new era, from the logistic point of view.

## **RESEARCH OBJECTIVES**

**RO1** I examine the development of the value chain, the supply chain and the logistic network. I unfold the interrelating interpretations.

**RO2** I explore the common points of the corporate value chain and supply chain, and the possibilities of integration, as well as the procedures of transformation of the supply chain functioning between the networks.

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<sup>1</sup>Köszegvári Tibor: A hadtudomány fejlődése az ókortól a XXI. századig. II. Felderítő szemle, 2007. szeptemberi szám. MK. Katonai Felderítő Hivatal 93-113 o.

USA Stratégiai Koncepciók és Hadműveleti elvek. (1997 USA NKS.)

We also find instead of focused logistics the notion of concentrated or controlled logistics. The Author

**RO3** I examine the development of the relation between military and civil logistics. I also do research on the change in the integrated and interdisciplinary effects of the supply chain and the possibilities of military and civil cooperation in an operational context.

**RO4** I show the birth of the conditions of *information and network centric logistics*, the factors involved and the emergence of the new network centric logistics.

**RO5** In the 21<sup>st</sup> century I examine the network centric systems of military and civil logistics, their change and common activities. I also forecast their development in and distant future. Departing from the objectives I am unfolding the in-depth relations of the supply chain, both in military and civil logistic environment.

In my dissertation, I will not analyze the effects surrounding the supply chain. My research does not embrace production logistics and the support procedures of the functional logistic areas.

Within the military context, I am not dealing with strategic operations. However, my objective is to unfold the development of the operational supply chain.

I disregard the inverse logistic tasks of the supply chain in the civil and military logistic environment, because of the limits of the dissertation.

I deal with the meaning of several synonyms of the “civil supply chain” mentioned in the title; among others civil, business, simplified and enlarged supply chain.

In the international environment, I deal with the areas of European civil and military issues, in a non-exhaustive way. In each chapter, I examine, interpret and analyze international factors.

## **RESEARCH METHODS**

For the effective work and forecast, I use present general correlations and interactions, based on scientific knowledge. My objectives are to discover and create new, yet unused statements, knowledge and methods. Departing from a *general method* of scientific research,

then using the *historical method*, I show the main stages of the development of the supply chain in different areas. I *compare* the similarities and differences of the elements constituting the supply chain. I *set up hypothesis* relating to the topic.

I pay special attention to the area of the research, to applied research, to analysis and conclusion, and to the publication of the summary and evaluation.

## **THE RESEARCH CONDUCTED CHAPTER BY CHAPTER**

***First chapter:*** I reveal correlations based on the theoretic and practical results of five famous international and national researchers. I analyze value adding procedures, draw consequences, and sum up my findings.

***Second chapter:*** I examine the development and change of the supply chain and the value chain, concentrating especially on their differences. The diversity of their relationship is at the focus of my analysis.

***Third chapter:*** I define the development of the supply chain in the last decades of the 20<sup>th</sup> century and in the years after the millennium. The development of the supply chain has been accelerated, and it took over the leading role from logistics; this was further encouraged by its dynamism, mobility, accomplishments and its cross-border capacity. Then I analyze the factors of the supply chain, which bring on changes in the 21<sup>st</sup> century. In an integrated and interdisciplinary cooperation a competitive supply chain can transform into a logistic network and a new logistic formation in an international environment.

***Fourth chapter:*** I carry out a diverse analysis of the results of the five researchers, I synthesize, re-think, and interpret them in the context of the 21<sup>st</sup> century. I reveal the change of the supply chain, its transformation into a network, then adding synergy flow to the flow of products and information in the logistic network its transformation into ***network centric logistics***. In my opinion this scientific formation is the new challenge of the future logistic era, which carries in itself new vision and thinking as far as logistics is concerned.

***Fifth chapter:*** I define military logistics and I carry it through the timeline of history. I analyze, define and examine its environment in Europe and Central Europe and explore its definitions. I pay special attention to researching the main issues of the supply chain and the cooperation of civil and military logistics, its development and possibilities. I define military logistics according to new logistic theories in military science. I add to the functioning of the

operational supply chain civil network centric logistics and its cooperation with operational logistic support. I pay special attention to focused logistic support, and to the elaboration of the system of space logistics and hybrid logistics. I forecast the development of logistic support in the context of network centric logistics.

There are new challenges awaiting to be resolved in military and logistic science. Their presence and effect strengthens the strategic role of logistics in the resolution of today's wars and conflicts.

The new era in logistics has begun; some elements of the old values can be used today, developed with new principles, theories, methods and practical possibilities, with the space expanding, and the logistic capacities ameliorating. It is inevitable in the near future for the information society to set up a knowledge-based, network centric and integrated logistic environment and system.

***Sixth chapter:*** I forecast the strategic role of logistics in the future, its capabilities and development. I draft the overall aspect of logistics in order to find strategic tasks, with capabilities and qualities that are in line with military (defense) strategy, the organization, spatial grouping, employment and tasks of fighting forces.

When exploring future logistics, I plan to create new logistic support systems of the 21<sup>st</sup> century, compatible with the new strategic and operational procedures. Accordingly, I explore capacities, and I assign logistic concepts and new solutions to the new operational approach.

I examine the military logistic context of the last decades of the 20<sup>th</sup> century and the first decade of the 21<sup>st</sup> century, and I synthesize its main factors in the future. Starting out from all this, I forecast the possibilities, capacities and challenges of logistics in the near future. I will not by-pass the logistic approach and thinking of the given time period, the gradual transformation of which is probable in the future. According to the new warring principles, it re-evaluates the capacities and application of logistics.

In the near future, the joint operational logistic support can be attained through a multidimensional, multinational, aligned logistic support, based on well-equipped logistic forces and abilities of high mobility, should any warring form or any way of application of the 21<sup>st</sup> century be in question.

Logistics in the future will be characterized by the stable and multifunctional organizational form of the brigade and the diversity of the multinational logistic support. The complete and purposefully organized logistic formation is the new, 5<sup>th</sup> generation logistic strategic organization in the future.

The basics of the development of the network centric logistics capacity is yet not sufficiently known. This approach has not yet spread extensively and the logistic application of technique, technological development is yet little known.

### **SUMMARY OF THE CONCLUSIONS**

I have thoroughly defined and shown the multiple theory and practice that was manifested in the last decades of the 20<sup>th</sup> century and the first decades of the 21<sup>st</sup> century in the changes of military and civil supply chain in national, international and European context. The military and civil supply chain and network of logistics has become decisive in the world. Its importance has grown, its dynamism has become effective, thanks to the realignments, and its functioning is determined by partnership, quality and results. Today, it is transforming more and more into a network. Perhaps the most eye-catching thing is, as far as the examined topic is concerned, that competition is more likely to become less important, while cooperation, partnership, synergy and being network centric are becoming more and more important.

The main issue in my research is the definition of value adding procedures and the set of relating notions. This also means the clarification of the relation of the value chain and the supply chain, and the elaboration of their functioning. I also detailed further future possibilities in civil and military environment.

The logistic principles, methods, technologies of the 20<sup>th</sup> century belong now to a past dimension. The logistics of the 21<sup>st</sup> century has arrived to an evolutionary cross-roads, but the development procedure still needs a period of transition. In my dissertation I examine from several aspects the factors of logistic development, based on which I got to one of the most important results in logistics of the first decade of the 3<sup>rd</sup> millennium, which is called today fifth generation logistics. This stage of development is characterized by the information and network centric, integrated, interdisciplinary logistic network. At the apex and superposition of my dissertation is network centric logistics (NCL), which I elaborated from numerous

aspects. I focused on new principles, methods, approaches and thinking, and also the new possibilities of logistic support in the near and in the far future.

During my research, the concept of joint operations came to the fore after the turn of the millennium. I see logistic support as focused logistics, which is capable of strategic support. To achieve this, a new logistic capacity and support is needed. In my dissertation, a new value and vision for the future, where the logistic support transforms, integrates, aligns the already functioning logistic resources. It concentrates it for a given objective, task, demand, anywhere in the world, should that be on a regional, national or international level. In a military context, the civil supply chain and network is not anymore a reserve for the support or operational chain, but directly its cooperating partner.

One of the main objectives of my dissertation is to define the cooperation of civil and military logistics. In unifying their forces, the civil business effect gives a new perspective to satisfying military demands. Thus, the involvement of the civil logistic chain in military tasks became more important. Regarding its availability, the coordination of civil logistic activity with military demands became crucial. Civil logistics is present in partnership, and its capacities constitute an active part in military support and operational chains.

I have proven that this cooperation and organized partnership is justified. Common abilities and the alignment of logistic functions are thus ameliorated. In this relationship, military logistics has not only functions of the support services, but an integrating and coordinating role as well.

I observed information and communication factors affecting 21<sup>st</sup> century logistics, with respect to the future. I asserted that these systems provide new possibilities and capacities, and that they demand the ability to embrace new procedures and applications. New principles, elements, systems and methods are created (network centric warfare, efficiency based operations, network centric logistics). New combat theaters are emerging (digital, network, fragmented). New armies are forming, like digital, precision, network and hybrid armies. New principles of warring appear, network centric warfare, the use of target army, multinational joint task forces. New procedures are employed, like efficiency based operations and target planning. As well as new support principles: the involvement of civil logistics into military support - contract logistics, information and network centric logistic support.



Today, logistic support has to adapt to the change in warring forms, to the formations of the employed fighting forces, to the warring environment, to network centric warfare, to the use of rapid deployment forces, to precision weapons and weapon systems and to the deployment of fighting forces. The structures and forces of logistics have to be prepared and applied with a large scale of capacities for the necessary support. Cooperation and synergy can further enhance this.

It is practical to organize operational logistic support in the future considering joint task forces and brigades engaged in operations without contact. Logistic support will be characterized by joint forces with a multidimensional expansion in space (land, maritime, subterranean, aerial, cosmic and cyber). The forces of logistic support have to be simultaneously deployable, according to the above, anywhere in the world, in any conditions, with highly mobile logistic forces, capacities and logistic soldiers trained in a versatile way.

The changes of the future give logistics strategic tasks, affecting a wide spectrum of logistics. Operational groupings change, they are transformed with the reorganization of the responsibilities of the services of the armed and joint forces. Fragmented groups will most likely become widespread in different areas of the world. Groupings by continent, by world seas, by airspace, in space or on a strategic basis. Fragmented grouping is divided into directions and also time intervals. Communication and resource circuits become more important, as well as the transport and information tracks in space, air or sea.

### NEW SCIENTIFIC FINDINGS

- 1) *During my research I defined the new logistic system. I placed **integrated and interdisciplinary information and network centric logistics (NCL)**, into the modern-day logistic system of the 21<sup>st</sup> century.*

Network centric logistics (NCL) applies the logistic approach, principles, technical instruments, technology of the 21<sup>st</sup> century, and the interdisciplinary results of several sciences.

The flow of material, information, and synergy creates a superposition, which enhances logistic capacities and organized activity in every network.

When exploring network centric logistics, I defined and went through the main values of the system and the possibilities to development and functioning from every aspect. Basically, the objectives of the systems are in line with military interests, the consumers' demands, successful operation and the abilities of the cooperating partners. It is based on military and civil logistic environment, and it can be placed in them in any space or time.

Departing from a well-built strategy, I drafted a complex, network centric logistic system, which is capable of functioning in the future according to scientific requisites and to provide a solid basis in the far future for successful development.

- 2) *I placed synergy between supply networks, chains and information, communication systems on new bases, and set up a new system of cooperation in the flow of network centric synergy. Thus, the synergy flows of the functioning systems and logistic networks of the 21<sup>st</sup> century are capable of concentrating on result oriented activities, or to assist them.*

I organized synergy capacities inherent in the network centric systems into a flow, which enhances controlled operation, and aligns it with the flow of material and information. The common activity of these three flows exponentiates the performance and results of logistic networks.

- 3) *I created the supply chain of vertical and horizontal cooperation between logistic networks.*

A new scientific result is the passage of the supply chain from competition to the system of partnerships, with a widening of cooperation, and an increased vertical and horizontal mobility between the industrial value chains and networks.

- 4) *As a result of my research I set up a system of logistics organized on civil, business basis, the civil information and network centric, integrated and interdisciplinary logistic network NCL (Civil). I imply this system in military logistic support operations and link it to the operational supply chain.*

*Another scientific result is the linking of the network centric logistic services NCL (civil) to Network Centric Warfare (NCW), then the later elaborated military networks of network centric logistics NCL (military)*

Military network centric logistics has an active organizing role in the operational environment, and civil network centric logistics becomes a cooperating part of the military network centric logistic system.

5) *I drafted the basics of space logistics and implied in logistic support the joint application of hybrid forces and manpower.*

I defined theoretic and practical possibilities in the future and unfolded the new development perspectives of the system of logistic support.

The two new logistic approaches may have a very important strategic role in the near future, in the emerging system of services as far as space forces and zones are concerned. It is highly probable, that armed combat will not always remain on ground, air or water; the theater and conditions of warring will thus expand into space as well. Parallel to this, the logistic system of aerial, terrestrial and spatial strategic operations will be widened with hybrid logistic support. The joint application of manpower and robotic forces will increase efficiency in the military context; in some areas even a breakthrough can be achieved, such as the air force, terrestrial and spatial forces, as far as logistic support is concerned.

### **PRAGMATIC USE OF THE FINDINGS OF THE RESEARCH**

I found a solution with the elaboration of the theory of the supply chain which promotes the synthesis of the new elements and the development of the supply chain, and to introduce a new version of it into economic and business life, and due to the common activity, into military operations.

Examining the supply chain, I found that based on its main characteristics I found the possibility to its further development and practical application.

Using new logistic methods, and through the analysis of civil practice and its manifested advantages, the effectiveness of military logistic operations can be increased.

The analysis of the supply chain opened up the way for exploring the new supply chain, network, and network centric logistics, which carry future values in themselves. Developing further the above, I project a future image to the near future and its practical environment.

I created a basis for future research. I intend to help logistic experts in decision making, should that be in theory or in practice and in acquiring experience, in order to increase effectiveness.

The greatest possibility lies in training, where the theoretic and practical development of network centric logistics and its application at multiple areas changes the present approach to values as far as functioning, quality and results are concerned. Its spreading brings a breakthrough in the logistic industry. It will be applicable in other fields as well, such as health, law enforcement, industries, infrastructures, different broad networks and systems.

At logistics specialties in civil and military institutions of higher education I suggest the introduction of “*network centric logistics*” and „*modern logistic approach and thinking*” into the curriculum.

As the result of the evaluation, the cooperation of civil and military logistics provides a possibility for the concentration of abilities and the increase of effectiveness.

## **RECOMMENDATIONS**

1. Network centric logistics is a basic strategy of the logistics of the 21<sup>st</sup> century, and the logistic support of its warring. I suggest the application of the theory in NATO military operations, and above all to joint operational tasks.
2. I recommend the introduction of the initiation into and the use of logistic support at all armed forces. Network centric logistic support should be the responsibility of the competent organizations and it should be applied in the future.
3. For its initiation and application, it should be taught in theory and practice both in military and professional fields.
4. In economic and business environment I also suggest to make possible its introduction for enterprises.

## PUBLICATIONS IN THE SUBJECT

### Foreign language journals published in Hungary

1. **Estók Sándor:** (2009) Logistique des stratégies, stratégie de la logistique  
Hadtudományi szemle 2009. 2. évf, 3. szám. p.116-125 (also published in Hungarian)
2. **Estók Sándor:** (2008) Boundless dimension of civilization AARMS 2008. 4. szám.  
p.593-605
3. **Estók Sándor:** (2007) Logistics in a Humane Perspective AARMS 2007. 4. szám.  
p.679-685

### Articles in Hungarian, in a moderate journal

4. **Estók Sándor:** (2009) Hálózatközpontú integrált interdiszciplináris logisztika Bolyai  
Szemle 2009. 3. szám. 23-33 p. [Integrated interdisciplinary network centric logistics]
5. **Estók Sándor:** (2009) A stratégia logisztikája, a logisztika stratégiája, Társadalom és  
Honvédelem XIII. évfolyam 1. szám 123-134 p. [Logistics of strategy, strategy of  
logistics]

### Articles in Hungarian

6. **Estók Sándor:** (2008) Űrlogisztika. Tranzit 2008. szeptember – október 58-59 p.  
[Space logistics]
7. **Estók Sándor:** (2008) A humán erő értéke a gazdasági és üzleti kultúrákban. – A  
kultúrákon átívelő logisztika - Tranzit 2008. szeptember – október szám. 14-16 p. [The  
value of human resources in economic and business culture – Logistics spanning over  
cultures]
8. **Estók Sándor:** (2008) A logisztika szemlélet és gondolkodás új dimenziói Tranzit IX.  
évf. 2008. 1. szám. január-február [The new dimensions of logistic approach and  
thinking]
9. **Estók Sándor:** (2009) Szolnokon a logisztika jövőérték és kitöréspont. Tranzit 2009.  
február [Logistics in Szolnok – future value and breakthrough]
10. **Estók Sándor:** (2007) Az intelligens logisztika digitális környezetben - Tranzit 2007.  
november [Intelligent logistics in digital environment]
11. **Estók Sándor:** (2007) A nyerő hármas: logisztika, informatika, marketing. Tranzit  
2007. október [The lucky triplet: logistics, IT, marketing]
12. **Estók Sándor:** (2007) Lánc, lánc, ellátási lánc Tranzit 2007. szeptember [Chain,  
chain, supply chain]

- 13. Estók Sándor:** (2007) Az outsourcing piramist épít az ellátási láncban Tranzit 2007. jún. – júl. [Outsourcing pyramide in the supply chain]
- 14. Estók Sándor:** (2007) A virtuális vállalat az intelligens logisztika szuperpozíciója - Tranzit 2007. május [The virtual corporation as the superposition of intelligent logistics]
- 15. Estók Sándor:** (2007) Logisztikai szolgáltatások helyzetének megközelítése Tranzit 2007.május [An approach of the situation of logistic services]
- 16. Estók Sándor:** (2007) Az intelligens logisztika világszemléletet alkot Tranzit 2007. április [Intelligent logistics creating a world view]
- 17. Estók Sándor:** (2007) Változások a nemzetközi logisztikai kapcsolatokban Tranzit 2007 márc. [Changes in international logistic relations]
- 18. Estók Sándor:** (2006) Jövőértékek az Észak-alföldi régióban. A+CS logisztikai szakfolyóirat 51. évf. 2006. július - augusztus 8-11. o. [Future values in the Northern Great Plain Region]
- 19. Estók Sándor:** (2006) Logisztikai szolgáltató központok szerepe a gazdasági életben LOGINFÓ 16. évf. 3 - 4 szám 20 – 21 oldal 2006. május- augusztus [The role of logistic supply centers in economics]
- 20. Estók Sándor:** (2006) Interdiszciplináris logisztika a gazdaságpolitikában. Értékelő és reagálások Dr. Knoll Imre professzor új könyvéről. TRANZIT 2006. június – július szám 50. o. [Interdisciplinary logistics in economic policy. Evaluation and reactions to the newly published book of Professor Dr. Imre Knoll]
- 21. Estók Sándor:** (2005) Megváltozott és változó logisztika a XXI. században Tranzit VII. évf. 2005. november 51- 53 o. [Past and present changes in logistics in the 21<sup>st</sup> century]
- 22. Estók Sándor:** (2004) Az Eurologisztika ma már bázis filozófia és a logisztika szuperpozíciója LOGINFÓ, 2004. 1. szám. 2004. január – február. 5. o. [Eurologistics as a basic philosophy and the superposition of logistics]

### Lectures

- 23. Estók Sándor:** Eurologisztikusi szemlélet és gondolkodás. Heller Farkas Főiskola Budapest, 2007. II. félév, 2008. II. félév, Logisztika szakirány előadás 64 óra. [Eurologistic approach and thinking]

**24. Estók Sándor:** Eurologisztikusi szemlélet és gondolkodás. Budapesti Kommunikációs és Üzleti Főiskola Budapest, 2009 II. félév; 2010 II. félév, Logisztika szakirány előadás 56 óra; 2011. II. félév Logisztika szakirány előadás 32 óra; [Eurologistic approach and thinking]

**25. Estók Sándor:** Információ és hálózatközpontú integrált interdiszciplináris logisztika – (katonai) Zrínyi Miklós Nemzetvédelmi Egyetem 2008. I. félév Mesterképzés előadás november 6 óra; 2009. II. félév. Mesterképzés előadás május 4 óra; 2011. február 23. Mesterképzés előadás 4 óra, [Integrated and interdisciplinary information and network centric logistics (military)]

**26. Estók Sándor:** Információ és hálózatközpontú integrált interdiszciplináris logisztika – (civil) Budapesti Műszaki Egyetem 2010. I. félév Mesterképzés előadás október - november 8 óra. [Integrated and interdisciplinary information and network centric logistics (civil)]

### Curriculum Vitae

**Name:** Sándor Estók

**Born:** 24<sup>th</sup> of August, 1952. Tornyoşpálca

**Marital status:** Married

**Children:** Andrea, Dániel

**Degree:** University

**Diploma:** Zalka Máté Military Technical College (1974) economist  
Academy of Military Transport and Logistics (1984)  
College of Commerce and Catering (1991) specialised economist

#### Academic public activity

#### Membership in professional organisations:

Hungarian Logistics Association, Regional Director, Northern Great Plain Region (2002 –

TRANZIT journal for Business, Logistics and Transport, member of the editing committee. (2006 – 2009)

Foundation for the Museum of Hungarian Aviation, Curator (1993 – 2003)

Hungarian Aviation Historical Society (1994 – 2003)

**Military career - positions:**

1974 – 1976	Szabadszállás Tank Regiment, planning and organizer officer
1976 – 1980	Tata Missile Battalion, Support deputy commander
1980 – 1984	Budapest Russian language course 1 year St.Petersburg Military Transport and Logistics Academy
1984 – 1985	Tata Tank Division, Logistic Chief of Staff
1985 – 1989	Szombathely Motorized rifle brigade Support deputy commander
1989 – 1991	Szolnok Kilián György Air Force Engineering College Support commander
1989 – 1991	Szolnok College of Commerce and Catering student
1991 – 1994	Szolnok Air Force College Material and technical Chief
1995 – 1999	Szolnok Air Force Engineering Institute Deputy bursar, Head of the Finance department
2000 – 2004	Budapest ZMNDU Finance directorate, Head of the Economic and finance department
2004 – 2006	Budapest ZMNDU Technical Support Directorate Training providing department, Deputy manager
from 2006 -	Heller Farkas College; Budapest College of Communication and Business , Logistics lecturer
2007 – 2011	ZMNDU Doctoral School, Doctorandus